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BUREAU OF BUSINESS RESEARCH
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FOOD DISTRIBUTION CURRICULUM

Improvements in the distribution of food are important not only to food distributors, but also to consumers and farmers. Notwithstanding the substantial improvements made in the marketing functions during recent years, their performance requires over half the total costs of marketing farm products. Retailing is particularly important in the search for more efficient means to get food products from the farm to the table.

With this need in mind, the Food Distribution Curriculum was established in the School of Business and Public Service in 1950. It has grown from only thirteen students to over two hundred. The National Association of Food Chains was instrumental in founding this curriculum, which is at present the only one of its kind in the nation. The student group uniquely includes graduate and special students who are attending Michigan State for one year only while on leave-of-absence from their employers: food manufacturers, wholesalers, and retailers.

This curriculum is built around a series of courses designed to acquaint the students with various problems and phases of the food industry. The students learn where to find information, while conducting research which can be utilized for the problems of their industry. Besides the food industry they study problems of a similar nature that have been solved by other industries. Allied courses, such as horticulture, meats, dairy, poultry, management, personnel and finance are also studied.

Questions concerning this curriculum should be sent to Dr. E. A. Brand, Director of Food Distribution, Business Administration Building, Michigan State University.

business topics

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"Let your discourse with men of business be short and comprehensive."

(George Washington's *Copybook*).

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A FORWARD LOOK FOR EDUCATION AND BUSINESS

*By WALKER CISLER**

The mutual benefits afforded to each other by the fields of business and education have provided the topic for previous writers in these pages. In the present instance, a world-wide approach to the problems of the atomic age cast new light on the need of business for educated men and women.

Though the search for truth is always going forward, there is something quite new happening in the world today. One aspect of this is the extraordinary acceleration of technical progress, with new industries and products appearing almost overnight. So fast is this process that our children have a hard time imagining how we lived when we were young.

The most rapid developments are occurring in fields that are difficult for the layman to understand. This acceleration will doubtless continue, and it will put ever greater responsibilities upon our schools of higher education. Another aspect of the change is the enormous energy requirements of modern civilization, particularly apparent in the United States. Our Nation doubles its demand for electricity just about every ten years. In the electric power industry, as in so many others, the problems of expansion and technical progress call for employees who are not only well educated, but capable of further education. At one time people were educated for their station in life; nowadays most men and women find that education must prepare them for change. The need is for a good basic education, followed by lifelong habits of continuing education. This has been the experience of many men with whom I have been working in the new field of nuclear electric power.

At this historic period we are just over the threshhold *into* an atomic age. The timing was most fortunate because we could already discern, in the not too distant future, the serious depletion of the world's fossil fuels. Without a new, comparatively low cost energy source, civilization would be compelled to slow down considerably and once again would have become dependent on muscle power and what energy we could collect from the sun with giant mirrors, photoelectric devices, heat batteries, photosynthesis, fermentation, weather and falling water. Instead, we now have within our grasp an energy source that is incomparably greater than anything the world has ever known. We estimate that the resources of fissionable materials exceed the remaining fossil fuels at least twenty-three fold. Moreover, we can expect in time to solve the problems of controlled nuclear fusion which, for example, might make the ocean's vast store of heavy hydrogen available as an energy source. We may also assume that there will be other discoveries leading to a further exploitation of nature's energy secrets.

In this way man can expect to have at least the energy that he will need to develop civilization to unlimited degrees of power. But already we are troubled by the multiplying problems that come when man achieves a greater degree of mastery over his environment than he seems to have over himself. Since man's will can now be expressed through the control of vast physical energy, his mental capacity and spiritual motivations have become more important than ever

*Mr. Cisler is President of The Detroit Edison Company. This article is adapted from a talk given at the Annual Alumni Conference of the College of Business and Public Service on the Campus May 25, 1957.

before. The philosophies that men live by will have the widest possible consequences. Here again the quality of the available education will have a determining force.

Let me compare the situation to the state of mathematics in ancient times. Since the mathematicians in those days had to use clumsy systems of notation, they were unable to solve many problems that a high school student can handle easily today. A similar cultural advance may take place when our minds catch up with our environment, and, motivated by a mutual desire for the common good, we reach an international agreement to use energy for creation instead of destruction. Fortunately, we have in our American experience certain reference points that will help humanity. We are a young nation, but we already have the oldest written constitution, and it has served as the model for others. "Our forefathers," to quote the noble words of Abraham Lincoln, "brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal." The enactment of such a constitution could have happened only in the new world, which at the time appeared to some like a second Eden, a new chance for humanity. John Adams called it "the best opportunity and the greatest trust . . . . . that providence ever committed to so small a number since the transgression of the first pair." The marvelous thing is that our Constitution has worked so well and that, with the help of educated citizens, we can evolve our institutions under its wise principles.

Some people wonder whether our advantages have not derived from our natural resources rather than from our democratic principles and capitalist economy. Actually, natural resources, in relation to population, are not appreciably more abundant here than in Western Europe and the Soviet Union. Prosperity depends mainly upon how the people who use those resources are integrated. The American people, in all walks of life, have used their individual energies with ingenuity and liberty. They have taken risks, endured hardships and enjoyed the rewards of their efforts. The sum total of their constructive work has done magnificent things with our natural resources.

The United States is the showcase for the accomplishments of freedom, education and enterprise. This is reflected very often in the reports of productivity teams that have come to our shores under the auspices of the International Cooperation Administration. For instance, a group of Norwegian trade union men wrote when they got home:

> "A visit to the United States gives one greater confidence in the ability of democracy to solve its problems. The country is still . . . . . moving forward culturally, socially and economically."

We in America often take our liberties somewhat for granted. I have seen enough of the world to know that liberty and individual initiative are never to be taken lightly. All who have traveled or done military service abroad will know what I mean.

None of us, perhaps, have seen the worst of it, but we have read of the tragic experience of millions who have lost their freedom and we know of the millions who gave their lives to preserve our freedom. The National Defense Budget indicates the seriousness with which our government views the threats directed toward the free world by the tragic malfunctions of human organization behind the iron curtain. A large part of the threat to human liberty has been propagandized as a crusade against capitalism. This is getting to be pretty old hat, but it is still believed literally by many people abroad who have no clear idea of American capitalism. For all that, far too many Americans seem to be a little vague on this latter point themselves.

It may be that our capitalism and democracy are hard to describe because they are not rigid systems of doctrine like communism. People from other countries are often amazed by the fluidity and informality that they find in our schools, industry, government and family

life. When they stay with us long enough they begin to see how our informality and individual initiative create both teamwork and complex achievement; they find the method behind our apparent madness.

Curiously enough, many people abroad think that the American economic system is wasteful. Actually, we manage our capital very efficiently and do more with an investment dollar than most of the other nations, including the Soviet Union. As every business administration graduate knows in detail, our way of doing things results in low costs of production and high wages. The benefits are passed on to the consumer, the employee, the bondholder, the shareholder, and government.

The profits of industry are much smaller than most people realize. The difficulty in making a profit is as strong a motivation under our system of private enterprise as the profit motive itself. Profit is essential to a business, but it is not easy to make. This fact exercises a considerable degree of control and leads to many agonizing reappraisals during the average business day. I think that it makes business a much better instrument than it could possibly be under socialism, where profit is of no significance. The opportunity to take reasonable risks in a changing technical civilization, with the ultimate responsibility for coming out ahead rather than behind, gives us greater assurance that the nation's savings will be put to work wisely.

Another contemporary factor in our system of private enterprise is the broadening ownership of the means of production. We may well call it a people's capitalism, for the trend is toward a wider ownership of stocks and bonds, with indirect ownership increasing through the investment of bank savings and insurance funds. This diversification of ownership has led to the elevation of the profession of management during the past fifty years, which offers so many opportunities to the graduates of this and other universities. However, with the problems of risk taking, competition, freedom, control, expansion and change, the lot of a manager is not an easy one. Management has certainly broadened its viewpoint in the past fifty years to see not only more technical and human problems but also more technical and human responsibilities. These are challenges that call for our best efforts and the widest concept of the public good.

In any organized society there are factors of instability. Some are natural causes, like variable harvests and changes in the weather, in population and age distribution. In addition, human factors such as new inventions, changes in taste and buying habits, international affairs and politics cannot be controlled. The individual variations in the abilities of men, their decision-making capacities and their sense of social responsibility have unpredictable effects. Communists and socialists often blame the effects of these factors on capitalism—but communist nations have the same problems.

One of the great beauties of our system of individual risk and initiative is that we don't all point in one direction at the same time. If we did, as men are forced to do under totalitarian systems, we would court disaster like the horseplayer who puts all of his money on one race. This has been the final irony for more than one dictator in the world's history. Our philosophy of liberating human energies, under just laws that we help to make, is certainly more resilient and humane. For proof we have only to look at the record of America.

But what of the rest of the world? During my travels in other countries, I have been deeply concerned to observe the extent of four serious imbalances that affect the social, political, economic, and emotional stability of all nations, including our own.

1. Population

   There are about two and one-half billion people on the earth today, and the population increases by the minute. The increase seems to be greatest in the very areas that are least

ready to provide the jobs, wages and products of an industrial economy.

2. Natural Resources

   There are nations without fuel and important metals. Much earth is arid, sparsely timbered, lacking in top soil. The problems of trade, production and even of subsistence are acute.

3. Energy

   We are so well provided with the facilities that produce and distribute energy that most Americans take it for granted. Yet there are nations where a major part of the population must still team up with the horse and the ox, as it were, to do the work that keeps them alive.

4. Tools and Industrial Facilities

   Even if we could help all of the undeveloped areas to build power plants, most of them would still lack the facilities needed to put electricity to use.

These are situations that create the problems vexing the governments of the world today. Because we and a few other nations have so much, the needs of the rest of the world are emphasized. They involve the destiny of perhaps one-half of the people of the world, who are like ourselves, except for education and opportunity. The misery, the disease, the hunger, and the waste of latent talent are inconceivable. Nevertheless, I am happy to say that there are many hopeful signs in nations where we have been able to lend a hand.

Last July, I was on a mission for our government to Korea. During the week that I was there I met many Koreans, including President Syngman Rhee, who, as you know, spent many years in America and returned to his native land in its hour of need. President Rhee is acutely aware of the fact that the free Korean people need much electric energy, tools and productive facilities. The high point of my visit to Seoul was an invitation to speak at Seoul National University to some 600 students about energy and education. In their presence, and within the University itself, I was impressed by a sense of calm and constructive effort, which contrasted with the destruction and privation on the outside. As I looked into their intelligent faces I saw the hope for the future of Korea, something more important than the expenditure of American dollars, necessary as they are for the present. The situation was strange and yet familiar as I spoke to them through an interpreter. I was in the presence of the universal force of education.

Less than a week ago, I was in Japan to speak before men from many nations who attended the joint conference of the United States and Japan Atomic Industrial Forums and the Fund for Peaceful Atomic Development in Tokyo, Osaka and Nagoya. These are organizations developed by educators, scientists and businessmen to spread the knowledge of the great possibilities for enterprise in all the fields related to nuclear energy. This may seem a long way to go to attend a three-day meeting, but when free nations need each other today in the name of education and initiative, the distance is not important. In this instance, approximately ninety people from the United States, most of whom have important responsibilities in the development of atomic energy, went to Japan to exchange ideas and experiences with their counterparts. Present, too, were numerous representatives from other far east countries. In spite of the exceedingly difficult language barrier, the programs were carried out effectively, and there seemed to be a good mutual understanding of the matters under consideration. In many ways, the meeting seemed to be very much like the international conference on the peaceful uses of atomic energy, held in Geneva in 1955, but on a smaller scale. I was deeply impressed by the sincerity of those present and believe they gained much to take home and put to useful purposes.

The free world is most interested in atomic progress in the United States,

partly because it is so successful, and partly because it is an example of cooperation between industry, education and government. As you may recall, the Atomic Energy Act of 1946 turned over atomic development from the military to civilian hands under the Atomic Energy Commission. The Act retained for government, however, a virtual monopoly with respect to research and development activities and the use and ownership of facilities and of all fissionable materials. In 1954 the law was re-enacted to permit American industry to begin work in these fields so that its technical and management skills might be put to use. Much progress has been made since that time on atomic power reactor designs for the production of electricity. A significant feature of our activities in the United States has been the breadth and depth of research on many types of reactors. This has been important because it is still too early to decide which reactor concepts are most practical and economic.

The United States is taking a strong lead in helping the other nations of the free world to understand the technical problems and to find out how nuclear energy can best fit into their own economies. Because of our broad approach to the whole field of nuclear possibilities, other nations are looking to the United States for the most advanced nuclear concepts. We are also working closely with Canada, Great Britain and Western Europe, which countries are making excellent progress in solving the immediate design problems that will provide productive facilities to help meet their very serious shortages of conventional fuels. We have not entered into an atomic power kilowatt race to demonstrate, by sheer number, that we can build many reactors based on a few designs. If we had done this, we would have squandered our abilities on a mere feat of mass production when we needed extensive knowledge much more than extra kilowatts.

At the Atomic Energy Commission's invitation, private industry in the United States is now designing and building full scale nuclear power plants to test out the economic possibilities in the most promising reactors. The Detroit Edison Company is working with a group of electric power systems and other firms as member of The Power Reactor Development Company, to build an atomic power plant near Monroe, Michigan, which we expect will be making electricity in 1960. This will be a breeder reactor, the largest of its kind yet to be developed in the world. It has the very special advantage that it makes more fissionable fuel than it consumes because, along with great quantities of heat which we will use to make steam for the turbine-generator to generate electric power, the chain reaction will also continuously transmute a very common form of unfissionable uranium into fissionable plutonium.

This plant has been named the Enrico Fermi Atomic Power Plant, after the late Enrico Fermi, the brilliant Italian-born physicist who first established the possibility of sustaining a nuclear chain reaction at the University of Chicago in December 1942 and who, in 1945, said "The nation which first develops the breeder reactor will have a great competitive advantage in atomic energy." We are making progress according to schedule and we are clarifying many important theoretical, engineering, financial and legal details along the way. All this information will be available to the free world at the discretion of the Atomic Energy Commission. Let me assure you that before the Enrico Fermi Atomic Power Plant goes into operation, it will have been proved safe by our own experts, by distinguished consultants and by the Atomic Energy Commission.

In working on the many problems associated with this great project, I have been impressed by the fact that within almost every problem there are subproblems requiring careful study. For example, the economic feasibility problems of competing with conventional power generation are made more difficult because we of the electric power industry are at the same time making much progress in improving the efficiency of the conventional power generation methods.

It should be stressed that all this work must be done by trained men and women. The colleges and universities are doing magnificently in training the research, engineering and management talents that we will need in the expanding future of nuclear energy. The schools are also carrying a heavy load of research. When you realize that the demand for trained personnel is great in all the other industries of America as well, you can see how important education is for the future.

Our greatest resource is our young people, along with all the educated minds we now have. We must find ways of helping more talented youngsters in high school to go on to higher education. We must help college and university graduates to find their place in industry. We must also make it more attractive for the right men and women to continue their graduate education so that our schools can have a fuller supply of brilliant teachers to staff their expanding organizations. The needs of education are greater than ever before and we in industry must stand ready to help. The job that education has ahead of it is as significant as anything that we may expect from science, engineering, business administration and all the other expert services that support civilization. Indeed, education will always be the source of our continuing accomplishments in these fields.

Looking backward, we can see that much of America's success as a free nation of individual enterprise has been derived from the application of the information and intellectual discipline that educators have given each generation. A free society must be a well-informed society. Our free institutions could not last long if our schools, colleges and universities should lose their independent administration. It would be difficult to say how much you and I owe to the teachers who shaped our awakening minds during those wonderful, long days of youth, when, in books and in the lecture room, we made our first acquaintance with the master spirits of human accomplishments. How much of the world could we see—much less understand—if we had no knowledge of history, economics and political theory? With how much sympathy would we detect the diverse interests and motivations of men if we had never studied literature, psychology, politics and sociology? How much of the outside universe and the inside atom could we apprehend without the magic eyes of science? On how many fingers would we count—and to what purpose—without mathematics? It is a chastening thought to realize just how much we owe to formal education. Without it the journey through life, for all but a few, would be a narrow corridor.

A good education is the passport to the great adventures of life. But to really enable us to go places, that passport must be stamped again and again with the visas of experience and continuing education. Just what happens to the college student who shuts his books for good when he leaves the campus? Ten years later he has an education that is ten years old. Twenty years later he has only what is unforgotten of an education that is twenty years old. Such a person misses much of the fun of progress. As Dr. Charles F. Kettering has said:

> Today's exciting era of rapid discovery and almost unbelievable technological progress offers young people with inquisitive minds—and a good education—scores of richly rewarding opportunities that were not even dreamed of fifty years ago. One Thomas Edison in a generation is no longer enough to sustain our kind of progress. Today we literally need thousands of well-trained young people with the kind of vision, imagination and courage that took Edison on his lifelong conquest of the unknown.

In these eloquent words Dr. Kettering, still a young man despite his years, summed up a significant truth that applies to the activities of all of us here today. We are fortunate to be living in an age that is moving so quickly ahead

in the search for knowledge and a surer basis for effective human cooperation. Along with the greater opportunities go more serious problems and more profound responsibilities. Let us be glad for all of them.

DO YOU KNOW YOUR STRAITS BRIDGE?

(Answers on p. 14)

Is it possible to say something new about the Mackinac Bridge? Your Footloose Editor celebrated Michigan Week by driving out on it as far as the concrete has been poured. Words fail to describe the exhilarating experience, but we think that our business-minded readers, already full of facts on the state's largest and most exciting structure, would like to examine themselves on their knowledge of this latest wonder of the world.

1. If the wire used in the cables were tied around the earth at the equator, how much would be left over for the bow knot?
2. How long would it take Roger Bannister to run across the entire length of the bridge and approaches?
3. In what way is the Golden Gate Bridge longer than ours?
4. What does Mackinac mean?
5. If the toll for my car is going to be $3.25, how many times will I have to cross the bridge to pay for it? (You may disregard administrative costs, real estate, preliminary expenses and financing charges, and also towage if you break down in the middle).
6. How much more will it cost to get a deer home from the Upper Peninsula than it did before?

OOPS, THERE GO THE GREAT LAKES

There is always something to worry about: if it isn't Strontium 90, it was likely to be Witchcraft, or, as here, the loss of the Great Lakes. We cite what was keeping one thinker awake late at night back in 1828.

Some just observations are introduced [into the book being reviewed] respecting the importance of the proposed canal from Chicago to the Illinois, and on the nature of the country, and the difficulties to be surmounted. There is not perhaps on the globe a spot, where such a mighty physical revolution could be produced with so little human labor, as by opening a communication between Lake Michigan and some of the upper tributaries of the Illinois. . . The intermediate land is a level prairie. . . Its extreme elevation above the surface of the lake is seventeen feet, and that feeble barrier is all that is interposed between this mighty mass of water and the rich valley of the Mississippi, which it overhangs, like an avalanche on the summit of the Alps. It would be a matter of curious speculation to calculate the consequences of turning to the Gulf of Mexico one of those immense reservoirs, which are the fountains of the St. Lawrence. The Delta of the Mississippi would be inundated and destroyed, and its low bottoms overflowed by a deluge, whose extent no man can estimate. A gradual diminution would take place in the waters of Lake Michigan, which would be felt in Huron and Erie, and Chicago would present some of the imposing features of the entrance into the Niagara River.

The North American Review, XXVI, n.s. XVII, no. LIX, 1828; unsigned review of Henry R. Schoolcraft, *Travels in the Central Portions of the Mississippi Valley;* p. 361.

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RESEARCH REPORT 17

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THE BRITISH PREMIUM BONDS

*By CLAUDE E. BITNER**

The attention of all interested in financial matters has been focused on the controversial British Premium Bonds since their inception last fall. This extremely interesting article both discusses the Bonds themselves, and sketches the historical background of this type of financing.

When the British Premium Bonds were first proposed last Spring, the Archbishop of Canterbury attacked them as being "an undignified and unedifying adulteration of public duty by motives of private gain." Harold Wilson of the British Labor Party stated that now the strength and solvency of Britain would depend on "the proceeds of a squalid raffle."

The bonds were proposed as a part of the British program to stimulate personal saving, an end which would ordinarily be considered sound, both morally and economically. Most of the indignation was aroused by the fact that buyers of the proposed bonds would receive the return on their capital in the form of chances at lottery prizes rather than regular interest payments. Despite widespread criticism (similar in tone to that mentioned above), bonds with a lottery feature, officially designated as Premium Bonds, were offered for sale in one pound denominations in November, 1956. The bonds have been purchased in moderate amounts each month since November when sales were at a peak, and the first lottery drawings which were held in early June of this year should stimulate further interest in the bonds.

The purpose of this article is to acquaint the reader with some of the unusual history of lottery bonds in general, to discuss the current British premium bonds in particular, and to set forth a few considerations which might bear on the use of a premium or lottery bond in the United States. Although many might scoff at the possibility of introducing such a bond in the United States, some will be surprised to learn that such a feature has already been used by the United States government to lure potential buyers of its securities.

The Continental Congress, when it floated the Holland Loan of 1784, used just such a lottery feature to lower the cost of borrowing and to make the issue attractive to potential Dutch investors. The Continental Congress, having no power to tax, was forced to rely on the states for revenue, print paper money, or borrow to meet the cost of government. Congress had borrowed from France and Spain during the period from 1776 to 1782 and authorized further borrowing in Holland in 1779, specifying a maximum rate of interest of 6% for the Holland Loans. The Holland Loan of 1782 in the amount of $2,000,000 was floated at an interest rate of 5%, but the bonds had to be discounted by 4¼% to attract buyers.

By 1784 the new country's reputation in the world's money markets had declined even further, for earlier loans had begun to mature and difficulties had been experienced in meeting interest payments. Because of trouble encountered in borrowing money at a maximum rate of 6%, John Adams, who negotiated a second loan of $800,000 in 1784, had to offer premiums in addition to a discount of 4¼% and an interest rate of 4%. These premiums consisted of securities worth 690,000 guilders bearing a rate of 4% which were given to those holding securities selected by lotteries held every two years from 1785 to 1797. The principal of both the original bonds

*Mr. Bitner is an instructor in the Department of Economics, Michigan State University.

and the prize bonds was also augmented by a gratuity at maturity costing 20,800 guilders, all extra features combined causing the actual yield to approach 6¾%.

The purpose of these unusual provisions was to make the bonds more salable and at the same time to lower the cost of borrowing. This American venture in lottery loan financing was not the first time that a country had included a lottery feature to attract lenders. The Dutch had established a national lottery in the eighteenth century. Lottery loans had been used in Great Britain as early as 1694.

The Exchequer was heavily pressed for funds toward the end of the 17th Century because of a war with France which Britain entered in 1689 and the Irish Revolution of 1688. In addition, the Stop of the Exchequer in 1672 which suspended payment on warrants, orders, and securities for a year had further complicated the Exchequer's problems. This Stop initiated by Charles II because of financial difficulties had seriously impaired the government's ability to borrow money.

In order to borrow funds, Charles Montague, then Chancellor of the Exchequer, initiated the Million Act of 1694, authorizing the Lottery Loan of the same year. Under this Act, 100,000 lottery bonds were to be sold at ten pounds apiece. The bonds were to mature in sixteen years, and the rate of interest was ten per cent, payable to all purchasers. Since this rate of interest was not sufficient to attract buyers, a lottery prize of 40,000 pounds was added to be divided among 2,500 lucky winners chosen at an annual draw. A. Andreas in his *History of the Bank of England* declares that the largest prize of a 100 pound annuity was won at the first draw by "four Hugenots who had given up their country to keep their religion. The English Public thought the hand of God was recognizable." The reception of the bonds, which were advertised as the "Million Adventure," was good; not only were all the bonds sold, but they were traded on the market at a premium prior to the drawings. The money for prizes and interest was raised by a new tax on salt.

Other lottery loans were also floated by private concerns in England after the Million Adventure. The then recently established Bank of England raised 1,217,630 pounds to augment its capital by the Malt Lottery Loan of 1697. In 1794, ten years after the second Holland Loan described above, the South Sea Company floated a thirty-two year loan with a lottery feature. This issue, which was later refunded, involved the conversion of government bonds to a lower rate of interest with the help of and at a profit to the South Sea Company.

Lottery bonds have been used by other governments from time to time primarily to add to the attractiveness of their bond issues, making them salable at a lower actual rate of interest than otherwise would be necessary. Both the Russians and the French have recently experimented with them for this and other reasons.

The chief purpose of the present British experiment, however, is not exactly the same as in the early British and American cases cited above—namely the improvement of terms to facilitate borrowing at lower yields than otherwise would be necessary. During these earlier periods, governments were facing a dearth of capital and a rudimentary banking system. In our more sophisticated age, governments do not usually have quite the same problem in financing governmental deficits. The problem is not so much one of finding a buyer for governmental securities, but of manipulating the governmental debt structure in funding and refunding operations without unduly disturbing the money market, the banking system, and the level of economic activity.

As a matter of fact, the 1956 British Budget provided for a budgetary surplus on a cash basis; the chief reason for instituting a lottery feature being a desire to stimulate saving and to remove

excess liquidity in the economy. If Chancellor MacMillan had been pressed to find placements for refunding issues, the Bank of England and the governmental trust funds would have stood ready to assist in floating the new issues. The Budget was labeled the "Savings Budget," and the premium bonds were only one feature of the budget designed to encourage saving, discourage consumption, and reduce liquidity in order to counteract inflationary pressures. The Budget provided for a tax exemption for the first fifteen pounds interest from savings and national trust accounts, income tax exemption for payments toward individual retirement schemes, and a higher rate of interest on new government savings bond issues.

The precise features of the new bonds were not promulgated until the November following the April budget, and the bonds were first put on sale on November 9, 1956, in one pound denominations. The bonds carry no interest or other reward to the buyer except the possibility of winning a prize at drawings held every month after the first drawing last June. Buyers must hold the bonds for six months before they are eligible for the prizes paid out of a prize fund which accumulates at the rate of 4% on the total amount of bonds outstanding. For every 10,000 pounds in prize money accumulated in this manner, 237 prizes will be distributed according to the following tabulation:

Number of Winners	*Prize*	*Total*
1	£1,000	£1,000
2	500	1,000
4	250	1,000
10	100	1,000
20	50	1,000
200	25	5,000
237		£10,000

The winning of a prize does not disqualify one from winning further prizes; therefore, the people who bought bonds during November have a slight advantage over those buying bonds in later months. As each monthly series becomes eligible for prizes, it will contribute six months interest to the prize fund. Holders previously eligible will stand just as good a chance of winning, but their bonds will contribute only one month's interest to the prize fund. The buyers during the month of November did not make a present to previously eligible bondholders because none existed. *The Economist* of November 3, 1956, which pointed out this technicality, stated that a November buyer of the maximum holding of five hundred bonds would have odds of slightly less than four to one of winning at least the minimum prize of twenty-five pounds at the first drawing. Pointing out that present odds of winning a prize depend on future sales, *The Economist* stated that buyers of the maximum number of the bonds would probably have better than a two to one chance of winning at least once during the year. Since the prizes are tax exempt, even a two to one chance of winning twenty-five pounds on a five hundred pound investment was appealing to many investors.

The British public was alive to the possibilities and probabilities, as testified to by the fact that sales were much higher in November than in succeeding months. The Chancellor of the Exchequer predicted that sales would amount to about fifty million pounds during the first month. His estimate was not far wrong, for approximately 46½ million pounds were invested during November. Sales soon dropped off, however, for as of March 2, 1957, only 60,480,000 pounds worth of the bonds were outstanding.

The first drawing for prizes began on Saturday morning, June 1, and was not completed until after the weekend. An electronic device nicknamed "Ernie", for Electronic Random Number Indicator, selected 96 one-thousand pound prizes, 192 five-hundred pound prizes, and 22,854 smaller prizes. One of the one-thousand pound prize winners held only five bonds but indicated that he would buy more with part of his prize money.

Lord Mackintosh, Chairman of the National Savings Committee, was quoted in the *Manchester Guardian* of January 7, 1957, as saying that, "if this unconventional form of savings is to be a success, it must be regarded not as a 'once-for-all' type of investment, but as another medium for regular saving . . . savings can only play their part effectively in checking inflation if they are made out of current income. . ." No figures are available that would indicate the extent to which the bonds have been purchased out of current savings, but the period April 1, 1956, to January, 1957, was the best one for the national savings movement since 1948. Net inflow of savings amounted to 51¼ million pounds; whereas during the corresponding period of 1955, the outflow amounted to 62 million pounds. Lord Mackintosh attributed this revival of the savings movement to inducements offered in the "Savings Budget." *The Economist* of January 12, 1956, commented, "Part of the big increase in national savings in the second half of 1956 was undoubtedly represented by switching from other forms of saving, but so far as the switch was from bank deposits—as a fair portion seems to have been—that was in one with the Chancellor's declared intention of helping to fund short-term debt." To sum up, the Premium Bond seems to have been a moderate success so far, and the possibility exists that the drawings in June will have stimulated further interest in the issues.

The British Budget of 1956 was designed to remedy a set of economic circumstances roughly similar to those currently prevailing in the United States. Our present national fiscal program also resembles the program of Great Britain last year. The proposed budgets of both countries provided for a cash surplus, deemed desirable by both the Exchequer and the Treasury Department in the light of inflationary pressures. The national savings movement of Britain had not been successful during fiscal 1955, and sales of U. S. Savings Bonds declined appreciably in 1956. The "Savings Budget" was designed to remedy this situation, and similar remedies have been proposed or adopted in the United States. On Apri 20, 1957, President Eisenhower signed a bill raising the rate of interest on Savings Bonds from 3% to 3¼%. A bill introduced in Congress by Representative Victor Anfuso of Brooklyn would make interest on Savings Bonds exempt from the income tax. In light of these parallels, perhaps a premium bond would be suitable for use in the United States.

A bond resembling the British Premium Bond could possibly be used in this country, but numerous obstacles and difficulties stand in the way. Although the possibility of using such a bond cannot be thoroughly discussed in all its ramifications, at least three questions might be appropriately posed.

1. Would a bond of this type be illegal in the United States?
2. Would such a bond be desirable from an economic standpoint?
3. Would a lottery bond be politically feasible?

Although the transmission of lottery tickets in the mails and in interstate commerce is presumably illegal at present, Congress could pass enabling legislation that would make a specified public lottery bond legal. There is no constitutional prohibition of public lotteries or gambling; therefore Congress could probably institute premium bond financing if it so desired.

If such a bond were legal, would it be desirable from an economic standpoint? In a period characterized by inflationary pressures, many economists would probably agree that increased saving or decreased liquidity caused by premium bond financing would be desirable, but others would argue that any habit of saving induced by the bonds might have unfortunate consequences during any future depression. In addition, the British bonds were criticized because they seemed to distribute economic rewards on the basis of chance rather than of merit. The whole problem is too complex for analysis in this brief article,

I'm after £1,000
PREMIUM SAVINGS BONDS
Here's a chance to jump at! Every £1 you put into this exciting new National Savings security is £1 saved. But after six months it can win you a big money prize —anything from £25 to £4,000, for there are thousands of prizes! As long as that £1 stays in Premium Savings Bonds, it goes into the draw for prizes again and again, month after month. The more Bonds you have the more chances you get; and you don't risk a penny for you can get your money back whenever you want it. You can't lose and you may win—and all prizes are free from U.K. income tax and surtax. Every winner is notified personally and in confidence.
Premium Savings Bonds are sold in units of £1 at Post Offices, Banks and Trustee Savings Banks. You can hold up to £500, so hurry up and get yours.
Gift Tokens. You can also buy Gift Tokens at Post Offices for £1 which can be given to anyone. Give them for Birthdays and Anniversaries, they're a gift with a thrill.
Thousands of pounds in prizes every month

Something for nothing, and a beautiful model thrown in. How can you lose?

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but some of the common pro and con arguments concerning lotteries may be of interest to the reader.

Chief among the arguments in favor of lotteries is the contention that people will gamble even if gambling is illegal and that losses should be directed toward some worthy cause such as meeting the cost of government. Another argument maintains that even the losers in a lottery receive some compensation for their loss in the form of the excitement and suspense generated prior to the draws. On the other hand, one of the chief objections is that it is wrong to encourage and legalize a practice that is obnoxious to many for moral reasons. It is often contended that the principal patrons of lotteries are those who can least afford to participate and that such expenditure should be discouraged rather than encouraged by the government. A lottery aimed at raising governmental revenue is also thought by many to be similar to regressive taxation. Arguments against lotteries might not apply to governmental lottery bond financing, but these general objections to lotteries might well make a premium bond unfeasible for use in the United States. Even now a lottery is advocated by Representative Paul A. Fino of New York City and others to replace any public revenue lost as a consequence of the pending constitutional amendment which would place a ceiling on the rates of the personal income tax.

If Congress considered the use of premium bonds, it would draw a great deal of criticism based on both moral and economic grounds. When MacMillan first proposed the British experiment, he undoubtedly anticipated the first kind of opposition, for he carefully stated to Commons, "Let me say at once that this is not a pool or a lottery where you spend your money. The investor in the bond I propose is saving his money. He will get it back when he needs it. But as long as he holds it saved, his reward instead of interest, is the chance of a tax free prize." Hugh Gaitskill immediately retorted that the term, premium bond, was a "structed euphemism." The premium bond scheme was heavily criticized as being an encouragement to

gambling and also drew a great deal of derisive comment in the press. The Archbishop of Canterbury's statement has been quoted above, and many other religious leaders and laymen criticized the bonds on the same grounds. Derisively, the *News Chronicle* spoke of the "Monte Carlo Budget," and a *Daily Express* headline said, "Have a Flutter on Harold."

Many Americans seem to have a high propensity to gamble, as do many of the British, and they might welcome the sale of lottery bonds in this country. Their political pressure in support of such a measure, however, might not overcome the intense reaction that would be generated. Perhaps comment in the press attendant on the first British drawings may provoke some serious consideration by Congressmen. If it does, the ensuing debate promises to be a lively and possibly humorous one.

Answers to Do You Know Your Straits Bridge?

(See p. 7)

1. 2,000 miles, about. You could make it a double bow.

2. 20:01:8+. We are assuming he can maintain the 4-minute to a mile rate, because after all this is *our* quiz.

3. The distance between the California bridge's main towers is slightly longer, *but* the Golden Gate has no side suspension spans, and ours are 1,800 feet long apiece.

4. Abbreviated form of Michilimackinac, "Island that Floats on the Turtle's Back", its Indian name.

5. 24,392,077 times. You had better get started.

6. Approximately the same but it is less likely to spoil. The Department of Conservation figures about $175 as the average cost of shooting a deer north of the Straits, and getting it home.

PRINCIPLES AND TRENDS OF PRIVATE PENSION PLANS

*By GEORGE L. GRANGER**

Is investment of pension funds in equities to be considered speculation? This and similar questions relating to private pension plans are discussed by a man closely associated with the problems of the insurance business.

The private pension movement is rooted in one of the most significant economic, social, and political developments of the twentieth century—the progressive aging of the population. Since the turn of the century the population of the United States has doubled; the number of persons age 65 and over has quadrupled. In 1900, 4 per cent of the population was 65 and over; in 1954, 8½ per cent; by the year 2000 it is estimated the percentage will be 11 to 13 per cent.[1] In 1900, approximately 40 per cent of the aged were still in the labor force; today the percentage is just over 20 per cent. There are numerous facets to this problem, but the most crucial is that of providing some degree of protection to the aged against economic insecurity.

The Development of Private Pension Plans

The first formal retirement plan in the United States was established in 1875 by the American Express Company. The idea spread very slowly, but from 1900 to 1930 a few hundred employers adopted formal pension plans. In the great majority of cases there were no contractual rights given to the employee and no financial reserves established. It was not until the 1920's that employers began to give serious consideration to incorporating contractual rights to employees.[2]

Private pensions are pensions for the employees of private enterprise, handled privately, without too many governmental requirements.[3] In 1954 there were 23,000 "qualified" pension and profit-sharing plans in operation—that is, plans that had been approved by the Internal Revenue Service as meeting the special requirements of the Internal Revenue Code. This number is increasing at the rate of 300 plans per month, 70 per cent of which are pension plans. The covered employees are in the neighborhood of 12 million, and contributions are being made at a rate of approximately $2.5 billion per year.[4] Of the 16,000 pension plans in 1954, 90 per cent were underwritten by insurance companies. These plans, however, covered only one-third of the total covered employees with two-thirds covered by uninsured trusts. Two-thirds of the employees covered by insured plans are under group annuities; the group annuity contracts have increased from 800 in 1940 to over 4000 in 1954.

The forces which influenced the growth of private pension plans and the function of these plans fall into three broad classifications. First, the most compelling employer motive is the desire to increase the productivity of his employees.[5]

[1]References are found at the conclusion of this article in a Table of References.

*Mr. Granger is an agent with the Mutual Benefit Life Insurance Company of Newark, New Jersey, located in Lansing. This article is the outcome of an honors course in General Business at MSU, which provided business men, already technically able in their field, the opportunities to work on a particular project for university credit.

It provides a convenient and socially accepted way of providing for superannuated employees. It is expected to reduce turnover, attract better employees, and be a morale-increasing implement.

Second is the changed viewpoint of labor. Until recently antagonistic toward pensions, organized labor in 1946 filed a grievance with the National Labor Relations Board against the Inland Steel Company. The outcome of this grievance was that pension provisions should be subject to collective bargaining.[5] Advantages to the employee include the avoidance of public relief or charity, special reward for service, compulsory savings, an incentive to "stay put", and a tax relief.

The third factor is the tax inducements; these are justifiable to the extent that private pension plans serve the public. The public is served by a reduction in the need for relief, the maintenance of purchasing power, and improved public and industrial relations. The great appeal of pension plans in recent years—95 per cent of the plans now in force have been established since 1939—has been that they have enabled employers to take deductions in high tax years for contributions which will not be taxed to the employees until subsequent years when it is expected that their taxes will be lower, either because of a reduction in rates or because they will be in lower brackets.

The discussion of the principles of private pensions will be broken down into six units: (1) The Present Tax Law and the Impact on Private Pensions (2) Basic Features of a Pension Plan (3) Types of Formal Pension Plans (4) Methods of Financing (5) Choice of Funding Medium and (6) a short report on the new and controversial subject of Variable Annuities.

The Present Tax Law and the Impact on Private Pensions

The Revenue Act of 1942 as amended by the Internal Revenue Code of 1954 lists the following qualifications for a trust to be tax exempt[4]:

1. The plan must be for the exclusive benefit of the employees of the employer or their beneficiaries.
2. The contributions made to the trust by the employer or employees, or both, must be for the purpose of distributing to the employees or their beneficiaries the corpus or income of the fund accumulated by the trust.
3. It must be impossible, under the trust instrument, for any part of the corpus or income to be diverted to other uses before all liabilities with respect to the employees and their beneficiaries are satisfied.
4. The trust(s) and any annuity plan that is intended to qualify must be parts of a plan which benefits:
   (a) 70 per cent of all employees or 80 per cent of eligible employees, provided at least 70 per cent of all employees are eligible — excluding certain part-time employees, and with a permissible waiting period for eligibility of not more than five years; or
   (b) such employees as qualify under a classification set up by the employer and found by the Commissioner of Internal Revenue not to be discriminatory in favor of employees who are officers, shareholders, persons whose principal duties consist of supervising the work of other employees or highly compensated employees.
5. The contributions or benefits must not discriminate in favor of employees of the classes above-mentioned—officers, shareholders, or supervisory or highly compensated employees.
6. The trust must not engage in certain prohibited transactions (described in section 503c) which are considered to divert benefits to the creator of the trust or a related person.

7. The trust must be created or organized in the United States.

If a qualified plan is formed, the employer is allowed to deduct the current service cost plus a portion of the past service cost. The latter can either be spread over the remaining future service of the covered employees or at a rate not to exceed 10 per cent.

The employee is taxed in the year(s) of receipt. I.e., an employee is taxed for the rates applicable to an annuity purchased for the amount of his contribution, even if this be zero. For example, if an employee retires on an annuity for $100 a month with a cost of $15,000, he will be taxed as follows:

(a) If he made no contribution toward the cost of the contract, the $100 a month will be taxable to him as received.

(b) If he made a contribution of, say $6000 toward the cost, and his life expectancy is 15 years, his cost will be one-third of the expected return ($6000 equals one-third of 15 × 12 × $100) and one-third will be deductible as cost and the balance will be taxed as income.

(c) In addition, death benefits are, to the extent of the employer's contribution, taxable as a long-term capital gain when received in one sum.

In addition to stimulating the creation of pension plans, the tax policy has affected the nature of the plans.[4]

1. The principal result has been to increase the rate of funding.
2. Formal plans in which commitments are made have been encouraged.
3. Plans have tended to become standardized.
4. Plans have tended to become more permanent.
5. Vesting has been encouraged.
6. Noncontributory plans have been encouraged.

Pension Plans

Basic Features. Certain basic provisions are common to all types of pension plans and these can be summarized under the three general headings of coverage, benefit structure, and source of financing.[5] Very few pension plans cover all employees of a particular employer (see 4a and 4b of the Internal Revenue Code of 1954 on page 3). An employee may be excluded as to: (1) Type of employment: part-time workers are seldom covered; only one department, or only one bargaining unit may be covered. (2) Type of pay: hourly employees are not infrequently excluded. (3) Length of service and age: for administrative purposes employees with a minimum length of service or under or above certain ages are excluded. (4) In an effort to achieve an equilibrium between earnings and retirement income, many employers exclude all or part of an employee's income covered by OASI.

The benefit structure composes the very heart of any plan—the size and type of benefits, how and when paid. Pension plans fall into two categories with respect to benefit formulas:[5]

(1) Money Purchase Plan. The contribution of the employer—and employee, if the plan is contributory—is fixed in the formula and the benefit is the variable. For example if the rate is 5 per cent and the income is $3000, an employee age 30 would receive an annual retirement credit of $39.47; an employee age 40 would receive $29.85.

(2) Definite Benefit Plan. Here the benefits are determined in advance by a formula and the contributions are treated as the variable factor. The benefits may be related to both earnings and services, to either one, or to neither. The latter has gained considerable importance since 1949 and provides a flat benefit, including the primary OASI benefit, to the em-

ployee who retires with, say, 25 or 30 years of credited service.

The retirement age of 65 is rather standard but retirement after 20, 25, or 30 years is not uncommon. It is customary to provide that an employee may retire early; employer's consent is usually required, but at a sacrifice in benefits. For example, if age 65 is the normal retirement age, a man wishing to retire at age 60 would draw 63.3 per cent of normally expected benefits.[5]

Implicit in any pension plan is the payment of a retirement benefit that continues for life. If this promise is underwritten by a life insurance company, the life income will be provided by an annuity. The employee will usually have a choice of a joint life and survivor annuity, a life annuity with 10 or 20 years certain, or a refund life annuity.

A pension plan may be terminated by the employee or the employer. It is a basic rule that an employee may always recover his contributions (if any). He may also recover any "vested" rights which he may have in the employer's contributions according to the pension agreement. If the employer should terminate the plan, all credited funds vest in the employees, active and retired.

From the standpoint of the source of financing, a pension plan may be contributory or noncontributory. Of the group annuity plans established from 1938 to 1942, 94 per cent were contributory, whereas from 1942 to 1946 the percentage dropped to 58.[5] This tendency is contributed to by the fact that an employer can contribute dollar for dollar while it takes approximately $1.30 of gross earnings for an employee to contribute one dollar.

Types of Formal Pension Plans. The legal arrangements under which the benefits of a pension plan may be provided can be classified as insured, as self-administered, or as a combination of the two. The insured plans include the individual contract plan and the group plans.

The individual contract plan calls for the issue of an individual annuity or insurance contract for each employee as he becomes eligible (usually after one year of continuous employment). Since it operates through a trustee, who holds title to and possession of it, it is often referred to as a pension trust. Either retirement annuities or retirement income contracts are used; the latter incorporates the added protection of insurance. All dividends must be credited against the employer's contribution for this or any other pension plan to qualify under a Treasury ruling that a qualified pension plan must provide definitely determinable benefits.[5]

The group plans include group permanent plans, the deferred group annuity plan, the deposit administration plan, and the immediate participation guarantee contract. The group permanent plan is essentially the individual contract modified to conform to the principles of group underwriting and administration. All the provisions are incorporated in a master contract and each eligible employee receives a summary certificate of the important provisions of the plan. This plan always provides for a death benefit; therefore the retirement income contract is generally used. If a whole life policy is used, the additional sums needed for retirement benefits may be supplied by the employer from current revenue or they may be accumulated in an auxiliary fund.

The deferred group annuity plan is the most important of insured plans in terms of coverage.[5] Here again a master contract is issued with individual certificates of participation. The plan is primarily designed for the payment of retirement benefits. If the plan is contributory, the employee's contributions are used to buy refund deferred life annuities to assure the employee recovering his contributions upon withdrawal or death prior to retirement. He may or may not have any vested rights in the employer's contributions. An annuity is purchased in full for the employee in the year in which it is earned.

If a contract is discontinued, the annuities which have already been purchased automatically vest in the employees.

The deposit administration plan is a group annuity contract under which the premiums or contributions are not applied to the purchase of individual annuities until the date of retirement. It is the insurance company's answer to the self-administered trusteed plan. It may be readily used with any type of benefit formula and lends itself to a variable retirement age.

The immediate participation guarantee contract is a relatively new device for the sole purpose of meeting the competition of the self-administered trusteed plan. It is normally restricted to employee groups of 2000 or more. It is the same plan as the deposit administration plan with but one important exception: IPG is for the large employer who prefers to retain in his business the funds which the insurance company would keep in their contingency reserves and therefore wishes to offset any adverse fluctuations through future contributions.

A self-administered trusteed plan is an arrangement under which contributions to provide pension benefits are deposited with a trustee who invests the money, accumulates the earnings, and pays benefits directly to eligible employees.[5] It is a form of self-insurance, with a trustee providing investment services and performing such administrative functions as may be agreed upon between the employee and the trustee. The deposits are determined by the employer's consulting actuary. Employer contributions are invariably discounted for anticipated mortality, disability, and turnover as benefits are for retirement. On withdrawal or death the employee receives a return of his contributions and his vested rights, if any, in the employer's contributions. The plan readily adapts to any type of benefit formula.

The combination plan is simply a combination of insurance and a trust fund. For example if death benefits are desired of $1000 per $10 of retirement income, a whole life policy, usually ordinary life, is carried with the additional cash needed for retirement benefits built up in a self-administered trusteed fund.

Methods of Financing

The various techniques by which the sums required to finance the benefits granted under the preceding legal arrangements are classified as the disbursement approach, terminal funding, or advance funding. The next section will discuss several of the aspects to consider in choosing a funding medium. The disbursement approach is the simplest technique; the employer simply disburses the benefits as they become due. Under this pay-as-you-go approach, retirement benefits are treated as payroll costs and are paid to the superannuated employees by the employer. There is no funding in the proper sense, and the payment of benefits is contingent upon the continued solvency of the employer. While once dominant, it is used only on a limited scale among larger employers today.

Terminal funding is a compromise between the disbursement approach and full funding. Under this arrangement, the benefits payable to retired employees are funded in full, while the benefits standing to the credit of the active employees are completely unfunded.[5] Either an immediate annuity may be purchased or the necessary funds transferred to a trust company. In either event, the required sums normally come out of the operating income of the employer since no advance provisions are made. However, there is a third-party guarantee that the fully funded benefits to retired employees will continue.

The term "advance funding" may be applied to any arrangement under which sums intended for the payment of retirement benefits are set aside under proper legal safeguards in advance of the date of actual retirement.[5] This does not necessarily imply full funding; for example, the accrued liability for past services may never be funded. This is the

conventional technique today, and usually enough to cover the benefits credited during the year plus the interest on the past service liability is set aside or funded yearly. Once an employer has selected the basis under which he will seek deductions, he must adhere to it.

The principal methods of advance funding fall into two basic types: single premium and level annual premium. The single premium method involves the setting aside, or funding, the amount needed to purchase or provide a "unit" of retirement income in the year in which it is earned. Past service credits are accumulated separately. This method is almost always used with deferred annuity contracts.

Under the level annual premium method, the total benefits to be paid to an employee are estimated and the sum required to provide the benefits is accumulated through uniform increments over the remaining years of service. The most familiar form is the individual level premium method which is employed in connection with individual and group permanent insurance contracts. No distinction need be made between past and future service. If the rate of compensation increases, an additional policy is added, or, in the event of a self-administered plan, an increase in contributions is made.

Choice of Funding Medium. The decision making when establishing a pension plan must follow the steps which have now been considered. The first step is a knowledge of the basic features of any plan. Once the benefit structure has been chosen, there is the choice between allocated and unallocated funding methods. Allocated funding is an inherent feature of individual, group permanent, and deferred group annuity contracts, while unallocated funding is followed under deposit administration, immediate participation guarantee, and self-administered trusteed plans (see the section on Types of Pension Plans).

The final broad decision is whether to fund through an insurance contract or through a trust. Of prime importance to the employer is the cost that will be incurred. The basic determinant, of course, is the benefit structure, the cost factors which must be considered are: mortality, interest, expenses, turnover, deferred retirement, and employer contributions. Final and perhaps most important consideration should be given to the security of benefits, flexibility, and service.[5]

Much can be written on the subject of mortality; how women live longer than men or how annuitants outlive the general public, but it is obvious that the various forces which lengthen the life expectancy are not influenced by the funding medium adopted to provide retirement benefits. One point can be stressed — if trust facilities are used, the entire cost of any increase in longevity will fall upon the employer (and employees if contributory). While the insurance company must bear this cost for those covered, of course the rates for new employees can be increased periodically.

The interest rate has a fundamental influence on the cost. The impact depends upon the age distribution of the employees and the degree of funding, but the importance can be seen in that money at 3 per cent compound interest doubles in 24 years — at 2½ per cent 35 years are required.

The records show that until 1953 the life insurance companies held a higher rate of return. However, insurance companies are restricted to 3 per cent of total assets in the form of equity stock. Trust companies are not so restricted and commonly hold 30 to 35 per cent of assets as equity stocks. Since 1953 the return on equity stock has been above normal and the trust companies are currently showing a higher rate of return.

The expenses incurred under either medium is negligible. The expenses under an insurance contract are final and amount to about 2½ per cent of premiums. A comparison is impossible, although the weight of authority is in favor of the trusteed plans, for the future expenses of the trusteed plans are unknown.

Turnover and deferred retirement are certainly independent of the medium used although cost reducing factors. The important point to be noted is that under an unallocated funding media, both are often discounted in advance and thus require a smaller initial outlay.

Employee contributions reduce the cost to the employer under either plan, but only under a trusteed plan is this reduction dollar for dollar toward retirement benefits. Where an insured plan has death coverage and the plan is contributory, it is standard practice for the cost of insurance to come from the employee's contribution. The result is that on the average the employer's cost is reduced about seventy cents by each dollar contributed by the employees.

Thus it is that of the six cost factors, only the interest factor has enough influence on the cost to warrant a second look in deciding between an insured plan and a trusteed plan. The current rates seem to be slightly in favor of the trusteed plans. Perhaps of greater importance is the regard for security of benefits, flexibility, and service.

If a pension plan is to fulfill its intended purpose in providing economic security, then security of benefits is paramount. The security behind pension promises can be measured in terms of a third-party guarantee, a segregated pension fund, and/or the general financial resources and good faith of the employer.[5] For all practical purposes, only one type of third-party guarantee is available and that is the guarantee of a life insurance company. Of course, an insurance company can only guarantee that for which it is committed; i.e., only the benefits actually purchased. A trust company is only obligated to the "reasonable man" investment and disbursement of the funds turned over to it.

The significance of a third-party guarantee diminishes as a segregated fund, irrevocably committed, approaches a sum sufficient to liquidate the accrued liabilities of the plan. Under the allocated funding types of insured plans, the insurance company not only guarantees full protection to the retired but if a plan should be terminated, the employee is also assured that all benefits earned after the plan started have been purchased in full — for unallocated plans, the position of the active employees depends upon the status of the unallocated fund. Under a trusteed plan, active and retired employees can only look to the solvency of the trust fund for their economic security.

In one sense, the general financial resources of the employer constitute the primary source of pension security. As long as he has the will and the ability, there is no worry. This is actually what is done under unfunded pay-as-you-go plans. (Rome ruled for centuries, but she fell.)

Flexibility is necessary for adjusting the benefit structure and perhaps the funding procedure. For example, some plans call for a supplement to OASI benefits to increase total benefits to an agreed level. With respect to adaptability, the trusteed approach lends itself to any of the benefit structures discussed. In general, this flexibility is matched by the deposit administration and in part by the deferred group annuity contracts.

The service offered is in effect an item based on personalities rather than an issue of insured plans vs. trusteed plans. Often only one is locally available. The local insurance agency may have an outstanding man to council his clients or the personal balance may be in favor of the trust company. Life insurance companies do have a greater tendency to operate nation-wide and will thus be in a better position to give personalized service to their pensioners.

Conclusions

No attempt has been made to say that any one plan is the "best". It should be apparent by now that a particular funding medium, a particular benefit structure, or a particular type of pension plan might be ideal for one set of circumstances and completely unsuitable for another. In the final analysis, the em-

ployer may attach more importance to security of benefits than to flexibility. In insured plans the ultimate in both flexibility and security is the newly-organized immediate participation guarantee contract (IPG) discussed briefly on page 19. Underlying any pension plan is the premise that having established a pension plan an employer is morally obligated to provide the benefits which it promises.[5]

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HOW TO BE A SUCCESSFUL PUBLIC SPEAKER

The following advice, given in 1517, is equally appropriate today.

Words which do not satisfy the ear of the listener weary him or vex him, and you will often see symptoms of this in the frequent yawns of such listeners; therefore when you speak before men whose good will you desire, and see such an excess of fatigue, abridge your speech, or change the subject; and if you do otherwise you will earn dislike and hostility instead of the hoped for favour. And if you want to see in what a man takes pleasure, without hearing him speak, change the subject of your discourse in speaking to him and, when he presently becomes intent and does not yawn nor wrinkle his brow and the like, you may be certain that the matter which you are speaking is agreeable to him.

Notebook of Leonardo da Vinci (B.N.2038 17 v)

NORTHEAST MICHIGAN AND THE DETROIT AND MACKINAC RAILWAY

*By ANNE C. GARRISON**

In our series of industrial articles about various parts of the state, it has often been possible to bring the story of an area into focus in terms of a single industry or natural resource. In dealing with northeastern Michigan, the Detroit and Mackinac Railway, which serves the cities along the shore of Lake Huron, provides the unifying factor.

The story of one of the most interesting small railroads in the country begins at a point where the only direction to go was up: it begins with bankruptcy. In 1895 the Detroit, Bay City and Alpena had given up the struggle to make money in a region where the vast lumber industry was rapidly dying. (Alpena's record cut, 220 million board feet, came in 1889, 31 years after the first pine was cut there, and the decline was as meteoric as the growth of the industry had been). Northeastern Michigan as a whole was suffering from the same slump due to rapid depletion of its single great resource; as lumbering died out, little other activity took its place. It is apparent that in this general decline of prosperity the railroads that had been built to serve the logging industry and the communities dependent upon it should suffer and die out.

To go back a little into Michigan history, the heavily timbered areas provided our principal wealth during our first decades of statehood. We have all heard of the past glory of Saginaw as the lumber capital of the world, through which there passed the apparently inexhaustible supplies that were shipped out year after year. In the heyday of this lumber industry, an uncounted number of small railroads brought the logs out of the deep forest down to the mills or to lakeside shipping points. With the building of connecting trackage between these independent lines and the amalgamation of several of them into the Detroit, Bay City and Alpena, transportation needs for a flourishing portion of the state seemed permanently assured; but the tall timber was less permanent than the steel rails, and the day inexorably arrived for the east coast lumber towns when smaller logs, smaller loads, dwindling profits, meant bankruptcy for the railroads that served them.

Into such a dubious economic picture as this there stepped the incorporators of the Detroit and Mackinac Railway. In 1895 they went into business, having bought up the assets and trackage of the Detroit, Bay City and Alpena, and planning to extend its run all the way to the Straits. This plan, incidentally, was never completely carried through; like the Atchison, Topeka and Santa Fe, whose main line fails to pass through Santa Fe, the Detroit and Mackinac reaches neither Detroit nor Mackinaw City, but runs between Bay City and Cheboygan. It is the only railroad serving the uniquely interesting coastal portion of northeastern Michigan, and today enjoys the distinction of feeling no pain at all economically when most other railroads have constant problems of varying degrees of frustration.[1] It runs through

*Dr. Garrison is Associate Editor of *Business Topics*.

[1]e.g., last year represented the second greatest monetary loss over passenger operations in American railroading history; See *Transport Economics*, the Interstate Commerce Commission, May, 1957. The D & M carries no passengers these days.

an area that contains the largest gypsum mines in the country, the largest Portland cement plant in the world, the largest and second largest of the country's limestone quarries, and an assortment of industries, one of which is the world's largest in the field of concrete block-making machinery. The state's potato capital, Posen, is on the line, and so is much rich farmland and more lakes and resorts than one could count. Alpena, the largest industrial concentration between the two terminals, has a well-balanced economic picture. Products or materials start out for a world-wide market over the tracks of this railroad. All in all, northeastern Michigan offers a picture of prosperity now and growth potential for the future that is satisfying alike to the communities and to the railroad that serves them. The area shares an optimistic conviction that Michigan as a whole and its portion in particular is entering upon a period of rapid development, with the Straits Bridge and the Seaway contributing to the expected progress.

Such is, sketchily, the situation today, and the hope for the future. How do you get to this favored position from that of 1895, when lumbering prosperity was flickering out like a dying fire? The new D and M Railway started immediately to promote the region it served, in the conviction (which still holds good among promoters of Michigan's vacation areas, and is proved true over and over again) that those who come to spend a holiday may return to spend their lives, and perhaps bring a prosperous industry with them. The determined effort to promote the holiday advantages of Michigan have been treated in an earlier article in this series.[2] Where the "tall whispering pines" once flourished, the toilworn city man was invited to take his rest. Many were the Michigan communities that rebuilt their prosperity around the resorting business. Today every automobile license in the state testifies to our being a Water Wonderland; we continue to reap the tourist's dollar to the extent of its forming one of our three chief sources of income every year.

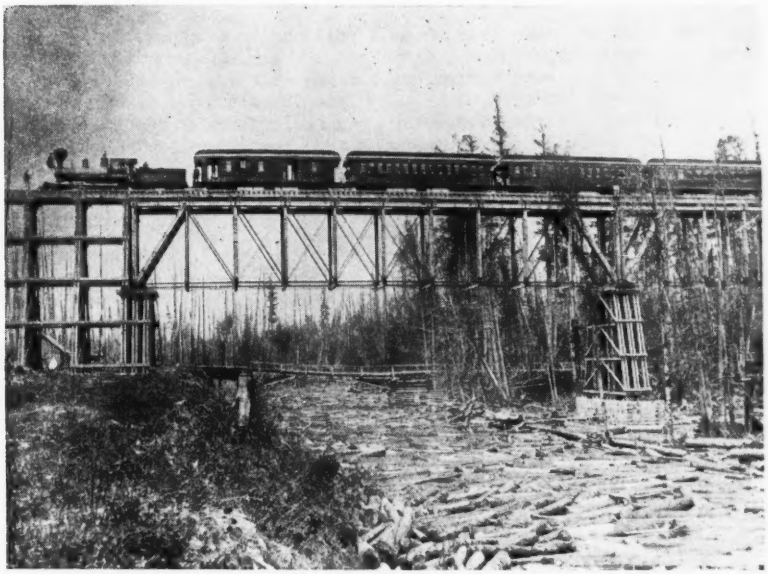
From its inception, the D and M catered to campers and tourists. It printed timetables complete with fish and game laws; it constructed its own summer resort (now the Tawas Beach Club, a private association); it searched out choice areas to which to transport sportsmen and vacationists. There was ozone in the pine-laden air of Lake Huron's shore, the prospective visitor learned; there tired blood would become rich again, and vital forces would be restored in the area between Bay City and Alpena. A leaflet or broadside dating from about 1900, and preserved in the railroad's archives, testifies to its solicitude for vacation business:

> We will rent you a camp outfit, suitable for any party up to eight, and tell you where to camp, for $2.00 a day the first week and $1.00 a day thereafter and furnish a man to care for the camp and do your cooking for $2.50 per day.

In addition to promoting the pleasurable aspects of northeastern Michigan, the D and M was ever alert to the region's economic possibilities. In 1901 it ran a carefully planned excursion for newspapermen and publicity writers; this trip along the Lake Huron shore was made on a most luxurious scale, and a volume of floreate description of the outing and the countryside and communities visited was published to fix the occasion in the memory of those who had enjoyed it.

Unfortunately, the railroad's complete history still remains unwritten. The fascinating materials for it exist in the form of a large collection of newspaper articles, time tables, passes, handbills, records of sales and purchases. When this large body of data is eventually organized, an extremely interesting chapter of the state's economic development will be able to be written.

[2] See "Old-Time Resorting in Michigan", Anne C. Garrison, *Business Topics*, vol. 2, No. 2, September 1954.



Rifle River Bridge, before 1895. Note the defunct D.B.C. & A. signs on the wood burning train, and the logs jamming the river below.

It has been the D and M's policy from the first to advance every aspect of the communal life of the area it serves. These efforts have been varied in nature. On one occasion, when forest fires obliterated the town of Metz, railroad crews labored in an heroic attempt to drive a rescue train through the conflagration, and perished with those they were attempting to save. Later the company built temporary houses for the survivors of this great fire of 1900. On a less dramatic plane, it has been alert to growing needs of the various communities, such as spur track and special accommodations. Line was built into Rogers City in 1910-1911 to serve the new Michigan Limestone and Chemical Company Quarry (an industry later purchased by United States Steel).

The progressive attitude of the D and M is characterized by the fact that it was the first line in the country to become completely dieselized. Its last steam locomotive was turned out to grass in 1947. Soon thereafter passenger service was discontinued; the concentration now is entirely upon freight hauls composed of everything from potatoes to concrete block-making machines starting out for Israel or Yokohama, or mobile homes travelling by flatcar across the country.

Alive to the fact that its welfare is tied to that of the region, the railroad's industrial development service seeks out every possible method of helping the economy of northeastern Michigan. The D and M will endeavor to assist in an educational program to develop agriculture, business and industry. Specifically it plans, at this point, to work with the potato growers of Presque Isle County to help them to produce a better-quality crop and higher yield. Small fruits, especially the high-bush huckleberry, appear to be candidates for future attention

in the program to improve the agricultural output of the region. Similar interest is maintained in the future of the wood products and mineral industries. With a view to the demands of an expanding economy, the railroad maintains trackage and property for future development at many points, so that new industries can obtain its help in finding a home.

Thus it is that since 1895 the D and M has prospered, both in serving present needs of its region and by anticipating demands that have not yet arisen. Some of the industries along its route ship by other means, it is true. Most agricultural produce at present moves by truck, and the gypsum and limestone industries ship largely by water. Yet even in such instances the railroad continues to provide for the freight shipping needs of the communities that serve those industries. Let us next examine in more detail some of these communities, with an eye to the economic pattern of the entire region.

Along Lake Huron's Shore

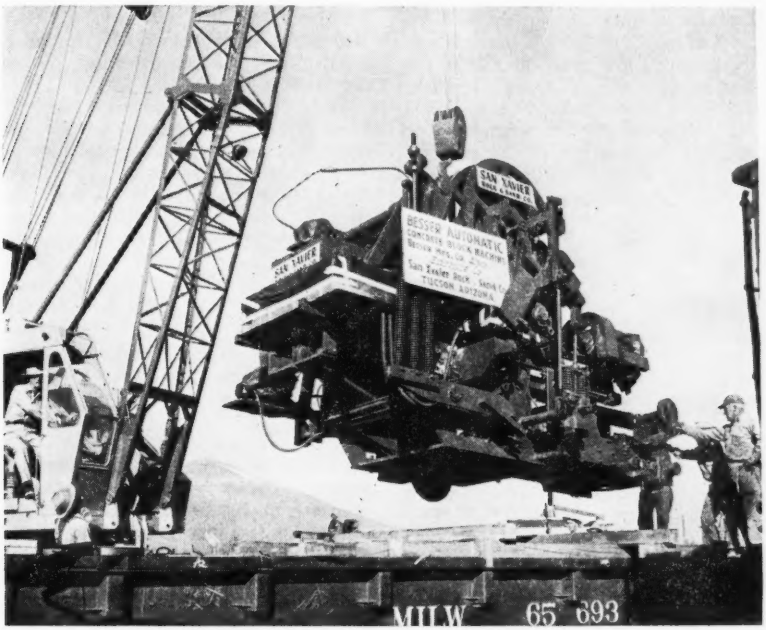
The map itself, so often the clue to the economic importance of a region, does not prepare one for the facts about this one. This would appear to be an isolated coastline, a bypass on the route anywhere. It is the geological factor that accounts for the prosperity and importance of northeastern Michigan. Enormous amounts of gypsum, useful, among other purposes, for the construction of insulating board and certain cements, and equally astronomical quantities of high-calcium limestone suitable for the steel and chemical industries provide the background for the steady industrial activity. There are in addition machine shops, paper mills, small manufacturing concerns that serve the automotive industry, and such unique activities as the production of the well-known Pinconning cheese, and the home berth of the world's largest icebreaker at Cheboygan.

Visually, the industrial picture is a striking one. At Alabaster bucket conveyors of U. S. Gypsum's raw material move out on an endless overhead conveyor system, to dump their loads in a storage dock hundreds of feet off shore, whence boats carry it to the processing plant. Close by at National City National Gypsum carries on a similar operation. Quarrying, from the spectator's point of view, is an endlessly interesting activity. Any traveller with the sidewalk-superintendent's pleasure in watching other people labor will have a pleasant trip between National City and Rogers City, where every hole in the ground is bigger than the one before, and each, it seems, is larger than any other in the world. As for the Alabaster quarry, the site of an apparently inexhaustible amount of valuable raw material was originally purchased for $50, a dog and a gun—slightly more than the price of Manhattan Island, but a bargain at that.

Travelling farther north along the curve of Huron's shore, the visitor to northeastern Michigan passes through Tawas City and adjacent East Tawas, the home of the D and M Railway, and the location of its shops.

Alpena

The most important community on the entire route, industrially speaking, is Alpena, with a population of 14,000, and an interesting diversification of activities. The paper industry is both the oldest and the newest thing in town. The Fletcher Paper Company started its first pulp mill in 1886, manufacturing material for newsprint from second-growth timber left after the loggers had passed. More than any other enterprise, this company kept the town from dying out in the depression that followed the passing of the lumbering industry. The present paper mill has been in operation since 1898. At the present time it manufactures fine-grade business papers exclusively, and employs 150 men. Some 60% of its annual output of 14,200 tons of paper is shipped by rail. The firm is headed by a member of the fifth



Unloading 20-ton Besser Vibrapac at Tucson, Arizona.

generation of the Fletcher family to hold this position. Thus paper-making is the veteran industry in Alpena, while it can also claim to be the newest: the Abitibi Paper Company, one of the industrial giants of the British Empire, with eleven mills in operation in Ontario alone, will open its first United States mill in Alpena next fall. It expects to employ 400 men, and will handle 70,000 cords of pulpwood annually in the manufacture of hardboard and insulation. At the present time its shipping plans have not been made public, though it will have available both dockage and railroad track.

Alpena's largest employer is the Huron Portland Cement Company, whose 1,000 workers produce the largest quantity of cement of any plant in the world. Various types of this product are manufactured from raw materials found in the area, and are used by the building industry throughout Michigan. Cement plays a major role in Alpena in one way or another, permeating the city's industry as its fine dust permeates the air. The limestone which goes into this cement comes from the adjacent quarry of the Wyandotte Chemical Corporation, the world's second largest limestone quarry, a mighty excavation comprising 230 acres and averaging 100 feet in depth. The Traverse Limestone quarried here is brought out by 20-ton Euclid trucks or by a modern conveyor belt system, and is crushed to a diameter of less than 2½″. A third of the output is shipped by the firm's four Wyandotte Transportation Company vessels, while the rest goes into the Huron Portland Cement operation. It has taken since 1903 to make this large a dent in the earth's surface; geologists call the remaining

limestone adequate for the needs of centuries to come.

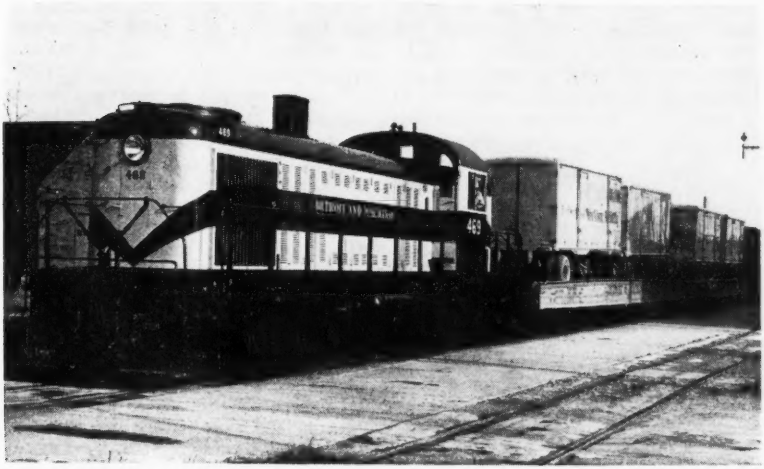
Cement figures again in the Alpena Cement Products Company, Northern Michigan's largest concrete block plant. Not only does this firm employ local raw and intermediate products, but it uses the world-famous Alpena-made Vibrapac manufactured by the Besser Company, the largest by far of all manufacturers of equipment for concrete block plants. This enterprising and interesting concern is a good example of the happy cooperation of native ingenuity and regional opportunity. In 1904 Jesse H. Besser and his father started a small machine shop which made hand-operated machinery for the forming of concrete blocks. The simple but practical Besser machines became popular by word-of-mouth advertising around a region devoted to the limestone-to-cement industries, and the firm has grown so much that today its plant covers 200,000 square feet and employs 700 men as opposed to the original 20. The Vibrapac, chief among the several machines and devices they produce, can be found in operation in most countries throughout the world. Not only is it so generally used, but it is also maintained and serviced by the firm, and local methods and materials periodically checked. This policy of continuing service typifies Besser's concern about its customers and its product, as does also the model plant and school which it maintains in Alpena, adjacent to the factory. Here come the purchasers of the machinery for an intensive course in the best practices of block-making, bringing with them samples of the materials that their particular machine will use: gravel, aggregate, limestone, from Idaho, Turkey or Vietnam. When the machine is shipped, a man has consequently been trained on the spot to use it to best advantage with the materials he will have at his disposal. The Vibrapacs leave by rail, completely set up and packed in wooden boxes against the hardships of travel by land and water. It is a memorable sight when one of the great overhead cranes in the machine shop picks up a crated Vibrapac, like a child's block the size of a cottage, and places it precisely upon a flat car.

One of Alpena's industrial contributions to the Straits bridge was the 200-foot-high steel caissons made by the Wiltse Brothers Corporation; these were floated by barge up to the Straits and sunk in position as a preliminary to the pouring of concrete for the supporting piers.

Though it is so firmly established upon the limestone that provides its economic well-being, Alpena suffers from being in a remote locality, and is making considerable efforts to obtain regularly scheduled airline flights. At the present time it is available to its business and vacation visitors only by car or bus, since the discontinuation of railroad passenger service. The outcome of its endeavor is unclear at the time of writing, as hearings for its case and that of other northeast Michigan cities are still going on before the Civil Aeronautics Board.

Rogers City

Located at the northeast edge of the Michigan mitten, Rogers City would seem to be as far as possible from the industrial heart of the state, but it provides its own heart, in being the site of a phase of industry vital to the entire Middle West. Here is located, just at the southern edge of the city, the Calcite operation of the Michigan Limestone Division of the United States Steel Corporation. It consists of a quarry that it would be idle to call enormous, as it reaches literally as far as the eye can see, comprising no less than 2,500 acres of excavated land; a crushing plant for reducing the limestone (Rogers City and Upper and Lower Dundee formations, older than the Traverse at Alpena, and of an unexcelled purity) to any desired size, from 11½″, useful in making steel by the open hearth method, to a consistency as fine as sand; in addition there is the Port of Calcite, where the Division's Bradley Transportation Line loads



Today's D & M train. Note piggy-backing: this line was one of the first to use this modern method of transporting semi-trailers.

the crushed stone on its nine vessels. It goes out to the plants of the U. S. Steel Corporation and to outside customers from Buffalo, New York to Chicago, Illinois and Duluth, Minnesota and is used in such diverse products as steel, chemicals, agricultural materials, sugar, cement and concrete. You will not find it in your sugar bowl or your razor blade, but it has been a necessary element in some stage of the manufacture of each. 16 million tons of this high-grade product comes out of this formidable hole in the ground each year. 500 workers, a private diesel railway system for hauling, $1 million Bucyrus-Erie shovels as high as three-story buildings are all involved in this operation.

Quarrying operations started in a small way at the Rogers City Calcite plant in 1912, to supply the moderate needs of a cement maker in Jackson, who had run out of raw material closer home. The extent of the limestone formation, and its exceedingly high quality, came as a pleasant surprise. In the same year the D and M opened its Rogers City branch, and today it continues to provide for the heavy freight hauling needs of the industry and the community.

Cheboygan and Beyond

North of Rogers City, the primitive grandeur of woods and water come into their own. Most of the way up to Cheboygan there is an unimpeded view over the gradually westering curve of shoreline; the eye is prepared by these great vistas for the stunning sight of the Straits Bridge, which comes into sight over fifteen miles away with 550-foot twin towers and their dramatic sweep of cable. At Cheboygan the New York Central tracks terminate the course of the D and M as they did at Bay City, forming, in geometrical terms, the chord of the latter's arc.

Cheboygan, though it lies almost in the shadow of the most advanced structure in the state, fulfills better than the other cities we have discussed the role of an old-time northern Michigan lumber town. Long famous for its enormous sawdust heap, the relic of the sawmills, it now berths the big ice-breaker *Mackinaw* al-

ready mentioned, and is the home of several industries of moderate size. The chief change in its industrial picture in recent days has been the purchase, last January, of a paper mill, some years out of production. Proctor and Gamble, the buyers, intend to put it into use producing paper towels for their subsidiary Charmin Paper Company. At the present time the mill is being dismantled and rebuilt, but is expected to be in operation in the fall as the largest employer in town, with 200 people on its payroll.

How About the Future?

All along this handsome landscape from Bay City to Cheboygan one is conscious of the presence of a line of railroad on one side and interminable shore of Lake Huron on the other. Underneath, out of sight, are the limestone and gypsum. These three factors have tended to make for unique advantages of a unique area. An inexhaustible natural resource, less subject to the ravages of man than were the riches of the lumber lands; a permanent source of transportation by water; a railroad alive to present and future opportunities for mutual benefit to itself and to the region. It has been a long and fairly steady climb up from the depression of the post-lumbering age, and though prosperity is firmly established in northeast Michigan, the direction of movement is still upward, with the Seaway and the Bridge promising greater mobility of goods and traffic in times to come.

The people of this area, as well as the industries themselves, are vitally concerned in the continued progress of northeastern Michigan. The Northern Michigan Development Council, representing thirty-three counties across the northern third of the state, draws its President from Cheboygan, while the President of the D and M Railway is a member of the Board of Directors. Michigan is on the move, and the citizens of the northeast portion intend to keep up with the rest of the state.

NO GOOD NEWS YET ON LAMPREYS

It is no news by now that we have lampreys in the Great Lakes; that they have practically wiped out the trout population in Lake Michigan in a decade, and that they threaten to do the same in Lake Superior. Having seen several hopeful paragraphs in various publications on the impending mass poisoning of this horrid pest, we went straight to the man who should know most about the success or failure of measures to control the lamprey in the lakes, and received the following information from James W. Moffett, chief of Great Lakes Fishery Investigations, U.S. Department of the Interior, Fish and Wildlife Service, in Ann Arbor. His communication follows:

> We do not have any particular news release on poisons being used or studied to control the lamprey situation in the Great Lakes. After some years of screening of chemicals at our Hammond Bay Laboratory near Rogers City, we have developed several that show specificity for sea lamprey larvae and do not harm fishes at concentrations used. I must add that these discoveries are laboratory findings, and we have not made any practical applications in the field as of the present time. We hope to have solved many of the problems facing us in the application of these poisons by the end of this coming open-water season, but since this work is pioneering in nature, we cannot guarantee any results. The development of such poisons in the use of the control of sea lampreys has a great potential value. We have always desired a means of control that would affect the lampreys before they reached the parasitic life-history stage. Controls at this point would be immediate rather than delayed as the current control measures are. By using controls designed to stop adult lampreys from spawning, we are faced with a 5-year delay before any positive results can be demonstrated.

CURRENT MICHIGAN BUSINESS CONDITIONS

The first half of 1957 has witnessed an economic picture containing many paradoxes and contradictions. The year began at a record level plateau and the economy has been subject to a rolling readjustment ever since. Vital indicators such as gross national product, retail sales, and capital expenditures are at record proportions while major soft spots are evident in home construction, appliance manufacture, and steel production. Inflation continues as the number one threat to our economic well-being, although it is a curious phenomenon born out of shortage money and credit while goods flow in abundance from our farms and factories. Inflation is more conventionally described as arising from an abundance of money and credit (purchasing power) in relation to the available supply of goods and services. The current inflationary prospects probably will remain for the rest of the year.

The general outlook for the last half of 1957 remains good. Demand from all major sectors has been strong and should continue so. The recent survey of the Department of Commerce and the Securities and Exchange Commission indicates that businessmen are expecting further increases in capital expenditures. Although part of the increase is due to increased costs, plant and equipment expenditures will provide a substantial support to the economic picture. Governmental outlays, at all levels, have been substantially above previous levels and should continue to expand. Consumer demand in the aggregate has been at high levels. With consumer income at record levels and with consumer credit now somewhat restrained, the prospect for continued strong consumer demand remains good. Even foreign demand for goods and services has been sharply up; non-military exports during the first four months of the year totaled $7.2 billion, compared to the previous record of $5.8 billion in 1956.

The basic factors for a record performance in 1957 are here. The problems of inflation, rolling readjustment, and scattered weaknesses still remain and must be dealt with effectively. Yet these are the very problems characteristic of an economy operating at or near optimum levels.

Nation's Business

Industrial activity, as measured by the Federal Reserve Board's adjusted index of industrial production, slipped somewhat from the 146 percent of the 1947-49 level attained during the first three months of the year. In April, the index dropped to 144 percent and, in May, to 143 percent. At current levels, the index is at the same point as last August when the economy began its record upward thrust the latter part of 1956. The May level of 143, however, compares favorably with the 141 of May 1956. Current declines have been rather general in most sectors, with important reductions in steel and in automobiles and other consumer durables. Steel production, for example, slipped to 85 percent of rated capacity during the last week of June, and a further drop was expected for the first week of July.

Construction activity continues at or near levels, except for the housing sector. Home construction, however, did experience increases in both April and May. The May figure for housing starts, at an adjusted annual rate of about 1 million units, was about 14 percent below a year ago; however, this number was the highest attained since last December. The sectors other than housing have been strong enough to maintain construction expenditures at record proportions. For the first 6 months of the year, total construction outlays reached $21.5 billion, 3 percent above the previous record of 1956. Construction spending in June, incidentally was the highest ever for that month. Construction contracts awarded during May totaled a record $3.4 billion, up 14 percent over the previous May; for the first five months, these contracts ran 5 percent above 1956. The glowing future that this boom might ordinarily foretell is marred by the current strike in the cement industry. Therefore the immediate future of the construction industry is partially clouded.

Total *employment* in the United States remains near record highs during 1957. Total employment in the United States has actually been rising continually since the post-Christmas seasonal drop. By May the total stood at 65,178,000. This figure was attained despite steady decreases in manufacturing employment since last October. Unemployment increased slightly during May, reaching 2,715,000. This figure places unemployment at about 4 percent of the civilian labor force, and is roughly comparable to a year ago.

Retail trade continued to increase more than seasonally during the first five months of the year. Seasonally adjusted, the preliminary adjusted figure for May places the months total sales at an estimated $16,367 million, up 4 percent over the same period of a year ago. Department store sales for the first 6 months of the year have been somewhat disappointing, averaging only 2 percent over 1956. This increase was due to price rises and not increased trade.

Continued inflation remains a potent threat to our economy. Prices on both the wholesale and retail level continued their upward tendency. *Wholesale prices,* as measured by the wholesale price index of the Bureau of Labor Statistics, stood at 117.1 of the 1947-49 level during May. This compares with the 116.9 level of March and the 117.2 figures for April. The May figure is 2.7 points above that of a year ago and indications are that the index resumed its rise during June, which will probably reveal a new record high. The *consumer price index* of the Bureau of Labor Statistics continued its upward climb, reaching a new record of 119.6 percent of the 1947-49 level during May. The May figure represents the ninth successive month of record breaking increases in the cost of living. The index now stands 4.2 points above a year ago. Every major sector of the index is above the level of a year ago, but the most important advances during the year have taken place in the transportation, medical care, and housing sectors. Despite these increases, the most recent monthly increase in the index was due largely to an advance in food prices. Measured by the consumer price index, the purchasing power of the dollar during May slipped further to 83.6 percent of the 1947-49 level, down 3.5 percent from a year ago.

Farm prices increased during both April and May, following a slight drop during February. The index of prices received by farmers stood at 243 percent of the 1910-14 level during May, compared to 240 percent a year ago. Prices paid by farmers have increased steadily since last October, so that the resulting parity ratio has remained in the low 80's ever since last Fall. The index of prices paid for all commodities and services, interest, taxes and wages reached 296 percent during April and May. The resulting parity ratio for May stood at 82, compared to the 84 percent for the same time last year.

Michigan's Business

Automobile production slipped to 531,359 in May and 500,271 in June, representing the lowest figures for the year to date. Although this gradual decline has been in evidence during the second quarter, automobile production for the first half of 1957, at a total of 3,372,850 represented a gain of 5.6 percent over the 3,192,767 of the first half of 1956.

The expected Spring surge in sales did not occur this year, as in 1956. This has convinced some industry leaders that large seasonal fluctuations in sales are a thing of the past. Industry sales for the first 6 months, at an estimated 3,057,000 new cars, were about 3 percent below the same period of 1956. Although sales were stronger in May and June, it may prove difficult for the industry to reach the expected total of 5.8 million cars sold in 1957.

Truck production, which has been running below 1956 figures during most of the first half, came within 1.3 percent of the 1956 first half total. The first half production in 1957 totaled 456,777 compared to last year's 462,722.

The *employment and unemployment* picture in the State continued to display the weakening that was characteristic of the first quarter of the year. Total non-farm employment decreased 37,000 from mid-January to the mid-May level of 2,579,000 with about half of the decrease taking place in the Detroit Area. At current levels, employment in the State is still just above the figures of a year ago. Manufacturing employment was primarily responsible for the drop; such employment stood at 1,120,000 in December 1956 and fell to 1,058,000 in mid-May. Apart from normal seasonal fluctuations, non-manufacturing employment has shown considerable strength. In mid-May, non-manufacturing employment of 1,280,000 was 12,000 over the January figure. The most severely hit areas of the State in the employment picture are Flint and Detroit. Unemployment in Flint increased from 4,600 in mid-January to 14,500 in mid-May; it increased from 91,000 to 104,000 during the same period in Detroit.

Retail trade in Michigan continues to be strong but quite spotty. For the year through May, state-wide department store sales ran 2 percent above 1956's record for the same period, although this increase was not uniformly distributed. In this connection, 7 of the 10 reporting centers failed to show any increase over 1956 for the first 5 months of 1957. Port Huron experienced the best improvement in department store sales, while Kalamazoo was the most depressed from last year. Flint figures remain close to 1956 levels; however,

it is well to recall that department store sales in Flint dropped precipitously during the second quarter of 1956. Total retail trade, as measured by the Michigan Department of Revenue Sales Tax Collections continued to be somewhat above 1956 figures in the second quarter of 1957. May collections, based on April business, were up over 10 percent over 1956; a late Easter, however, was partially responsible. June collections on May retail trade indicate that May 1957 was at least as good as May 1956.

Banking activity continues to show the fairly strong position noted earlier. Bank debits by May were above 1956 rates in almost every center of the State. Even Flint's bank debits in May were above 1956, although a similar comment applies here as was true of Flint department store sales. In May, bank debits of the Lower Peninsula banks averaged more than 5 percent above 1956; while the Upper Peninsula banks averaged 7 percent above 1956 during the same month. Time deposits continue to advance, particularly among the Federal Reserve member banks of the Lower Peninsula. These banks had time deposits totaling $1,411 million at the end of May, this figure being 9.6 percent above a year ago. Detroit member banks has time deposits of $1,332 million at the end of May, up 2.2 percent from the previous year. Demand deposits in the member banks of the Lower Peninsula outside Detroit stood at $1,332 million at the same time, up only 0.2 percent over a year ago. Detroit member banks had demand deposits of $2,595 million at the end of May, down 3.6 percent from a year ago.

Bank Debits

City	Bank Debits (Thousands of $'s)			Percent Change from Previous Year		
	Mar. '57	Apr. '57	May '57	Mar. '57	Apr. '57	May '57
Adrian	30,766	28,677	31,076	+ 9.5	+14.1	+28.2
Battle Creek	79,683	76,251	76,817	+ 6.8	+ 8.2	+ 6.3
Bay City	60,011	54,694	58,094	+14.2	+10.8	+12.7
Detroit	6,867,151	6,376,316	6,782,974	+ 5.3	+ 6.2	+ 5.9
Flint	157,994	153,010	155,438	− 7.3	− 3.0	+ 0.2
Grand Rapids	328,307	327,391	339,928	+ 2.1	+ 4.7	+ 5.0
Jackson	106,117	98,803	100,091	+11.8	+12.0	+ 9.1
Kalamazoo	163,250	148,702	158,277	+13.3	+ 3.4	+ 7.1
Lansing	154,023	145,712	156,741	− 5.8	− 2.6	+ 2.7
Muskegon	94,181	88,841	90,439	+ 2.9	+ 8.7	+ 4.0
Pontiac	91,661	85,034	87,562	+11.1	+16.9	+ 4.5
Port Huron	43,294	40,971	43,643	− 1.0	+ 3.3	− 0.3
Saginaw	120,566	117,802	124,295	+ 2.1	+ 6.5	+ 7.3
Escanaba	13,774	12,428	12,739	+19.7	+11.2	+ 8.9
Marquette	13,674	12,371	15,161	+15.7	+11.2	+20.1
Sault Ste. Marie	9,099	9,470	10,061	−13.1	−10.6	− 8.0

Sources: Federal Reserve Banks of Chicago and Minneapolis and Board of Governors of the Federal Reserve System

Department Store Sales

City	March '57 Percent Change from Feb. '57	March '57 Percent Change from Mar. '56	April '57 Percent Change from Mar. '57	April '57 Percent Change from Apr. '56	May '57 Percent Change from Apr. '57	May '57 Percent Change from May '56	Percent Change 1957 vs. 1956
Battle Creek	+52	− 7	+15	+ 9	+12	+13	+ 3
*Detroit	+26	− 8	+15	+14	−12	+ 3	+ 3
*Flint	+32	−19	+16	+ 7	− 1	+ 1	− 6
*Grand Rapids	+30	−14	+ 7	+ 7	+ 2	− 6	− 5
*Jackson	+20	−12	+15	− 4	+19	+ 6	− 4
*Kalamazoo	+18	−28	+10	− 3	+ 2	−11	−10
*Lansing	+36	− 8	+14	+11	+ 2	+ 3	0
Muskegon	+27	−14	+27	− 2	+ 9	0	− 4
Port Huron	+40	+ 3	+22	+20	+ 4	+14	+12
*Saginaw	+29	−11	+33	+ 5	− 7	+ 2	− 1

*Metropolitan Areas

Source: Federal Reserve Bank of Chicago

Motor Vehicle Factory Sales From Plants In U. S.

	Factory Sales Mar. '57	Factory Sales Apr. '57	Factory Sales May '57	Percent Change from Previous Year Mar. '57	Percent Change from Previous Year Apr. '57	Percent Change from Previous Year May '57
Passenger Cars	585,734	541,733	537,112	+ 0.4*	− 2.0	+13.3
Motor Trucks	91,703	105,175	102,312	−13.8	+ 4.0	+ 6.4
Motor Coaches	341	506	499	−21.4*	+36.4	+37.8

*Correction

Source: Automobile Manufacturers Association

Electric Sales In Kilowatt Hours

	Thousands of KWH Sales Feb. '57	Thousands of KWH Sales Mar. '57	Thousands of KWH Sales Apr. '57	Percent Change from Previous Year Feb. '57	Percent Change from Previous Year Mar. '57	Percent Change from Previous Year Apr. '57
Residential	672,875	645,711	620,866	+10.8	+ 6.4	+ 8.1
Commercial	347,246	345,940	332,887	+ 8.8	+ 6.6	+ 5.5
Industrial	916,702	920,928	945,512	+ 2.1	+ 0.6	+ 6.9

Source: Edison Electric Institute

Non-Farm Employment[1]

	State of Michigan	Detroit Met. Area	Flint	Grand Rapids	Lansing	Saginaw	Upper Penninsula
March 15, 1957	2,603,000	1,426,000	140,000	127,700	79,300	61,900	77,100
April 15, 1957	2,591,000	1,422,000	135,000	127,000	79,100	61,400	77,400
May 15, 1957	2,579,000	1,413,000	130,900	126,100	78,900	61,500	80,100
Percent Change from Year Ago:							
March 15, 1957	+0.9	+2.9	—[2]	−1.6	−1.7	−2.2	—[2]
April 15, 1957	+0.3	+2.4	—[2]	−2.1	+0.3	−2.1	—[2]
May 15, 1957	+0.9	+2.6	—[2]	−2.2	+3.5	+1.2	—[2]

Total Unemployment[1]

March 15, 1957	172,000	94,000	8,100	9,100	2,900	2,700	9,800
April 15, 1957	181,000	98,000	11,500	10,000	3,200	3,000	9,500
May 15, 1957	187,000	104,000	14,500	10,700	3,300	2,700	7,500
Percent Change from Year Ago:							
March 15, 1957	−6.0	−21.7	—[2]	+68.5	+11.5	+17.4	—[2]
April 15, 1957	−2.2	−19.7	—[2]	+81.8	−15.8	+11.1	—[2]
May 15, 1957	−9.7	−21.8	—[2]	+69.8	−41.1	−34.1	—[2]

[1]Labor force estimates from May 15, 1956 on have been revised by the Michigan Employment Security Commission on the basis of recently developed benchmarks. Revisions, where necessary, have been made back to January 1949 by the Commission. These estimates are not necessarily comparable with the labor force information given earlier by this agency.

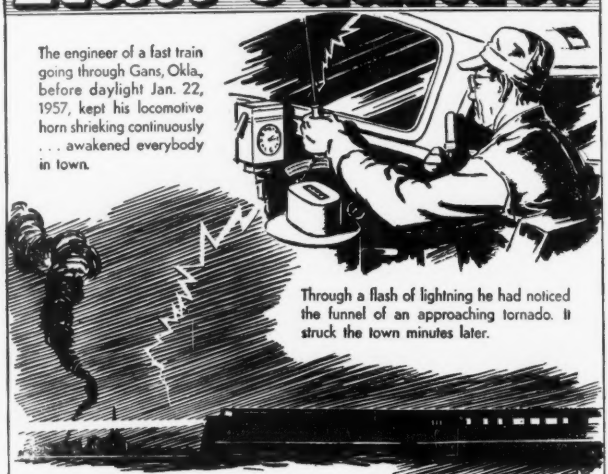
[2]Comparable figures for Flint and the Upper Peninsula for 1956 have not been made available at the time of this writing.

Source: Michigan Employment Security Commission

—MARVIN HOFFMAN

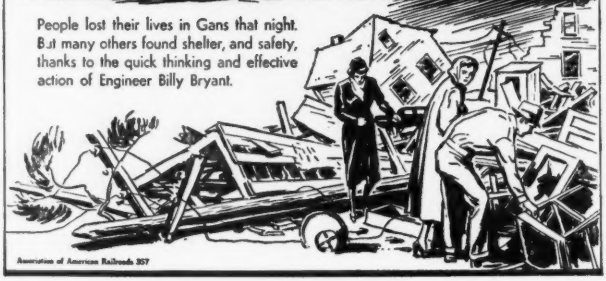
Rail oddities

The engineer of a fast train going through Gans, Okla., before daylight Jan. 22, 1957, kept his locomotive horn shrieking continuously . . . awakened everybody in town.



Through a flash of lightning he had noticed the funnel of an approaching tornado. It struck the town minutes later.

People lost their lives in Gans that night. But many others found shelter, and safety, thanks to the quick thinking and effective action of Engineer Billy Bryant.



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